AE451 – Experiments in Aerospace Engineering

2021-22, I Semester

WRITING LABORATORY REPORTS

A laboratory report is an English composition about the results of a scientific experiment. Write clearly, using good grammar and punctuation. The lab report starts with a title page containing the name of the experiment, author's name, course name, date of performing the experiment etc. Each report must include ALL the following sections, in order. Name each section.

Objective

State the purpose of the experiment in the following form which implies a specific outcome. e.g. "The objective of this experiment is to verify _____ by [process used].

Introduction and Theory

State the physical principles which govern the effects this experiment seeks to investigate. Give the relevant equations or formulas. Explain different kinds of calculations needed for this experiment and state the equation you used for each.

Equipments

Describe equipment and materials which were used to perform the experiment. Diagrams of the experimental setup (Schematic diagram – not a block diagram) must be included.

Procedure and Measurements

Identify and describe the data which you obtained in performing this experiment and the procedure by which you obtained them.

Results & Discussion

This section deals with the analysis of the data, which you have collected, in the lab report and contains three sections: (a) sample calculations (b) data presentation and (c) discussion and error analysis.

(a) Sample Calculations

Show one complete calculation for each derived quantity that you are interested in. The reader must be able to clearly see the path that you took from the measured data to the derived data. Show formulas symbolically, followed by the measured quantities substituted in the equations, and finally the answer. Include references for any standard values that you use in your calculation.

(b) Data Presentation

Report here the data which you have calculated from the measured data. Provide this data in table form, and also as graphs if required. Graphs must be properly labeled with

captions, axis labels and units, and a legend clearly identifying what all of the plotted lines are. When plotting experimental data, use symbols at the data points, then connect the symbols with straight lines. Plots of theoretical formulas should be plotted without symbols. In addition, there should be enough points so that the data appears like a smooth curve,

(c) Discussion and error analysis

The discussion section is to include a thoughtful and insightful discussion of all data and graphs in your lab report and an error analysis. Break your discussion up into paragraphs, one for each portion of the experiment. When analyzing your data make direct reference to data points, tables and graphs. When comparing your experimental data to theory or standard values make use of percent error.

Conclusion

This section contains experimental conclusion. Briefly compare experimental results with the respective results from theoretical analysis (wherever applicable).

Appendix

The appendix should contain all items which do not belong in the main report such as data sheet containing raw data collected in the lab, graphs etc.

General Comments about lab reports

- The lab reports for the formal labs should follow the format given above.
- The lab report associated to the demonstration experiment, which do not require data analyses, should contain a one-page summary of what was observed in the lab.
- The lab reports are due within one week of performing the experiment (as instructed by TAs). The lab reports should be submitted as a soft copy uploaded only to mooKIT (online platform).

Do not copy lab report. The penalty for copying (either from your friends or from earlier years) is as follows:

a. Caught copying in one lab report: zero marks in the report
b. Caught copying in two lab reports: Zero marks in all the lab reports
c. Caught copying the third time: Automatic ‘F’ grade in the course.